

PESTICIDE REPORTS

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CHEM

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EPA OFFERS VIRTUAL TRAINING FOR PESTICIDE APPLICATORS IN INDIAN COUNTRY

The Environmental Protection Agency (EPA) is offering a free, two-day training webinar on August 11-12, 2021, to certify participants as private applicators of restricted-use pesticides (RUPs) in Indian country under the [EPA Plan for the Federal Certification of Applicators of Restricted Use Pesticides within Indian Country \(EPA Plan\)](#).

RUPs require special care to avoid harming human health and the environment. In accordance with the requirements in 40 CFR § 171, RUPs can only be sold to or used by pesticide applicators who are specially certified, or to persons under the direct supervision of a certified applicator. RUPs can only be used in areas where EPA has explicitly approved or implemented an applicator certification plan for that state, tribe or federal agency.

Any person who uses RUPs within Indian country under the [EPA Plan](#) needs a federal certification from EPA. Additionally, some tribes may choose to further restrict or prohibit the use of RUPs in their areas through the implementation of tribal codes, laws, regulations or other applicable requirements. The EPA Plan does not supersede such tribal requirements. Applicators of RUPs in Indian country should take steps to determine if there are additional tribal requirements they must follow.

Applicators interested in attending the two-day, 12-hour course should express interest by

emailing EPACertplan@epa.gov by August 9, 2021. EPA plans to hold another training on November 17-18, 2021.

(EPA July 16, 2021)

<https://www.epa.gov/pesticides/epa-offers-virtual-training-pesticide-applicators-indian-country>

EPA SEEKING PUBLIC COMMENT ON PETITION RELATED TO SERESTO PET COLLARS

As part of the U.S. Environmental Protection Agency's (EPA) work to address concerns raised about pet collars, the agency is asking for public comment on a petition from the Center for Biological Diversity requesting that the agency cancel the registration of insecticide product PNR1427, more commonly known by its brand name Seresto (EPA Registration No. 11556-155), and to suspend the registration pending cancellation. Seresto is a brand name for dog and cat collars designed to kill fleas, ticks, and lice and contains the active ingredients flumethrin and imidacloprid.

EPA understands and shares the public's concerns about reported incidents with Seresto pet collars. The agency is working to gather information about these incidents and will use this information to determine whether these pet collars still meet the legally required safety standard for registration under FIFRA.

To that end, in April 2021, EPA wrote to Elanco and Bayer, the current and previous holders of the registration at issue, requesting additional information on incidents to better characterize the nature and scale of the incident reports. The information EPA requested was more extensive than standard reporting practices yield.

EPA has received the requested data and will use this information, along with any relevant information received during the public comment on this petition, to determine if any additional action is needed.

The agency encourages pet owners to discuss with their veterinarian when flea and tick control is needed for their pets and which type of control product they should use. Pet owners should read the entire label before using the recommended product and follow all directions carefully, as well as monitor the pet after treatment.

Consumers whose pet experiences adverse reactions from treatment with a flea and tick product should consult their veterinarian immediately. They should also contact the [National Pesticide Information Center](#), an EPA information-sharing partner that has staff who are specially trained in responding to pesticide exposure incidents, including those involving pets. For flea and tick collars specifically, pet owners should remove the collar immediately if the pet experiences any adverse reaction. In addition, consumers whose pets experienced an adverse reaction from pet collars or topical treatments should also report the incident on EPA's website at www.epa.gov/pets.

The public comment period on the petition is now open for 60 days. The petition will soon be available in docket ID number [EPA-HQ-OPP-2021-0409](#) at www.regulations.gov. After carefully considering public input and the requests of the petition, EPA will respond to the petition.

[More information on protecting pets from fleas and ticks can be found on EPA's website.](#)

(EPA, July 13, 2021)

<https://www.epa.gov/pesticides/epa-seeking-public-comment-petition-related-seresto-pet-collars>

COMMENT PERIOD EXTENDED FOR DRAFT RISK ASSESSMENTS AND PROPOSED MITIGATION MEASURES FOR SULFURYL FLUORIDE

EPA has extended the public comment period for the draft risk assessments and proposed mitigation measures for sulfonyl fluoride. Comments are now due by September 23, 2021 and should be submitted to docket [EPA-HQ-OPP-2009-0136](#) at www.regulations.gov.

For the registration review of sulfonyl fluoride, which includes all the uses of the pesticide, EPA released sulfonyl fluoride draft risk assessments (DRAs), including the combined ecological draft risk assessment and drinking water assessment, and the occupational and residential risk assessment for public comment in May 2021.

The DRAs are part of a multi-step process to identify risks as well as actions that can mitigate risks. After considering public comments, EPA will proceed with registration review by issuing the proposed interim decision, which will propose measures to reduce human health and ecological risks.

The [Sulfuryl Fluoride Draft Interim Re-entry Mitigation Measures Memorandum](#) also released in May 2021 outlines the new safety measures EPA is proposing for fumigation uses and is in response to the EPA Office of Inspector General's December 2016 [Report No. 17-P-0053](#) that was conducted to assess which additional safety measures could be taken to prevent serious injuries from use of this pesticide during residential fumigation.

After a thorough review of public comments, EPA will issue the Final Interim Re-entry Mitigation Measures Memorandum, including the label requirements for sulfuryl fluoride products.

[Additional information on sulfuryl fluoride can be found on EPA's website.](#) (EPA, July 15, 2021) <https://www.epa.gov/pesticides/comment-period-extended-draft-risk-assessments-and-proposed-mitigation-measures-sulfuryl>

LAWSUIT CHALLENGES EPA'S APPROVAL OF NEW HERBICIDE

The Center for Food Safety and the Center for Biological Diversity filed a lawsuit in the U.S. Court of Appeals for the Ninth Circuit, challenging the Environmental Protection Agency's approval of trifludimoxazin, an herbicide intended for pre- and/or post-emergent control of broadleaf and grass weeds. BASF defended the safety of the herbicide ingredient and need for additional weed management options for farmers.

As farmers continue to face weed resistance issues, BASF sought registration for its herbicide Tirexor, the first new mode of action for burndown of grass weeds in 20 years. Trifludimoxazin is the active ingredient in the herbicide, although the product is not yet available in the United States.

The groups' lawsuit alleges EPA violated the Endangered Species Act and the Federal Insecticide,

Fungicide, and Rodenticide Act by discounting impacts of spray drift and runoff to terrestrial and aquatic plants, fish, and threatened and endangered species.

As a highly complementary and compatible mixing partner, it features durable residual activity and displays strong performance on weeds with low use rates. Additionally, it is flexible enough for use on multiple crops. Targeted crop and non-crop opportunities include corn, soybean, cereals, peanut, citrus, pome fruit, tree nuts, oil palm, pulse crops and total vegetation management.

Miracle King-Wilson, public relations manager for BASF Agricultural Solutions of North America, notes the registration EPA provided for the product in May of this year was the result of more than 32 months of evaluation by the EPA.

“BASF continues to work alongside the EPA to provide the necessary information and data it requires to approve these types of registrations, and as the authority on these matters, we stand by its decision with regard to the benefits and safety of these products when used according to their labels,” King-Wilson notes.

BASF explains Tirexor works by inhibiting the enzyme protoporphyrinogen oxidase thereby disrupting the cell membrane of plants. It uses a novel binding mechanism for optimal control and burndown of broadleaf and grass weeds, which have encountered significant weed resistance issues.

“Growers continue to need solutions and technologies to control their toughest weeds. BASF believes in the value these herbicides can add to farming operations across the country, which is why we continue to invest in bringing these solutions to market following the regulatory requirements administered by authorities like the EPA,” King-Wilson says.

The environmental groups claim the agency admitted in its response to public comments that it was ignoring the clear requirements of the law, leaving endangered species without any protections for potentially a decade or more. Some endangered species at risk from trifludimoxazin include the Monarch butterfly, Chinook salmon, rusty-patched bumblebee, and other fish, insects and wild plants. There are also concerns about potential impacts to aquatic plants and organisms, as there is currently no mitigation to address runoff.

"It's disappointing that even with the change in administration, EPA is continuing to approve new pesticides that harm the environment, farmers, endangered species, and human health—without a thorough consideration of these harms," says Amy van Saun, senior attorney at the Center for Food Safety. "EPA admits that spray drift and runoff of trifludimoxazin are likely to cause damage to non-target crops, wild plants, and fish, yet it failed to implement measures that could help to reduce those risks."

The environmental groups claim trifludimoxazin is roughly ten times more potent on soybeans than dicamba, the herbicide whose spray and vapor drift and runoff has caused unprecedented damage across many millions of acres of soybeans the past several years. Dicamba's previous approval was vacated by the Ninth Circuit just last year; CFS and allies' lawsuit challenging dicamba's most recent registration is currently under review in the Ninth Circuit.

"EPA's approval of trifludimoxazin is incredibly irresponsible, since its own analysis shows this herbicide will cause considerable drift damage to plants over 1,000 feet from field's edge, with absolutely no buffer zones or other effective measures to protect these plants or the organisms that depend on them," says Bill Freese, science director at the Center for Food Safety.

The EPA's registration decision and label contain very little in the way of mandatory mitigation measures, increasing the likelihood of harm when the herbicide is applied in real-world conditions, the environmental groups add. The registration of trifludimoxazin will allow it to be used on many major crops as well as on large amounts of sensitive non-agricultural areas. This broad registration means it may be used on millions of acres and pose a significant risk to protected and non-protected plants and the wildlife that depend on them. It will also result in significant risks to fish, the environmental groups claim. (Southwest FarmPress, July 22, 2021) <https://www.farmprogress.com/farm-policy/lawsuit-challenges-epas-approval-new-herbicide>

WEST NILE VIRUS DETECTED IN MOSQUITO SAMPLES FROM MULTIPLE STATES

Mosquitoes positive with West Nile virus have been found in a variety of samples throughout the United States.

Here is a look at recent activity from various media outlets.

Colorado. A sample of mosquitoes in Weld County tested positive for West Nile virus according to the Colorado Department of Public Health and Environment. The infected mosquitoes were detected using the county's weekly mosquito testing for West Nile. A report-based detection system is used, which depends on reports from the public to track cases. There have been no human cases of West Nile in Colorado so far this year. In 2020, 35 people in Colorado contracted the disease and one person died as a result. Source: [The Gazette](#).

Illinois. The Chicago Department of Public Health announced a group of mosquitoes tested positive for West Nile. Four pools were positive of the 108 tested between July 5 and 9. Mosquito traps and testing have been occurring in the area since late May. There have not been any human cases of West Nile in Chicago so far this year. CDPH will continue to monitor mosquito samples and 40,000 catch basins will be treated with larvicide. Source: [WTTW](#).

Indiana/Ohio. Health officials in Indiana and Ohio are urging people to be cautious because West Nile has been detected in mosquitoes in both states. A sample collected in Vigo County, Ind., tested positive, as well as a sample taken from a park in Toledo, Ohio. No human cases have been detected in the area, but experts expect to see more West Nile activity this year. Source: [WLWT](#).

Oklahoma. According to Tulsa Health Department officials, a sample of mosquitoes in a trap in Tule County tested positive for West Nile. THD runs a mosquito surveillance program where traps are set weekly in places throughout Tulsa County. The caught mosquitoes are tested on a weekly basis. The program begins each May. There are no confirmed cases of West Nile virus in humans so far this year. Source: [KJRH](#).

Texas. The first human case of West Nile virus in Dallas County for 2021 was detected. Positive West Nile mosquito samples have been found in Cedar Hill, Dallas, Highland Park, Mesquite and University Park. These cases have led to scattered spraying in order to decrease the mosquito population. Source: [NBC DFW](#).

(PCT Online July 22, 2021)
<https://www.pctonline.com/article/west-nile-virus-detected-mosquito-samples-from-multiple-states/>

TREATED SEED TROUBLES

For the first time in nearly a decade, Dan Hesterberg poured a few bags of untreated corn seed into his planter this spring.

"It was kind of weird opening up the seed and dumping it -- I thought, 'Wow! It's just plain old yellow corn -- no purple, no green!' the Vermilion County, Illinois, farmer recalled.

The seed had no insecticides, fungicides or other chemicals on it, a rare practice known as "planting naked." While that modern moniker conjures up images of vulnerability, it was how most seed arrived on his farm until about 15 years ago, Hesterberg points out.

Since then, seed companies have been coating a growing number of compounds on nearly every corn seed planted in the country; use in other row crops, such as soybeans, wheat, cotton and rice, is rising steadily as well. Yet details about their use, efficacy and fate in the environment are murky.

The seed treatment industry operates with minimal federal oversight, due to a loophole in EPA's governing law, leaving questions about the amount of pesticides applied via this route and how unused treated seed is discarded each year. In the meantime, a growing number of federal and academic studies are casting doubt on its necessity, particularly in soybean fields. Another body of research is finding most of the pesticides coated on the seeds aren't staying put, with alarming consequences for water quality and wildlife.

Most recently, new questions are arising over what happens to large amounts of pesticide-coated seeds that must be discarded at the end of each season. No federal laws govern the disposal of bulk amounts of treated seed, and there is little follow through or monitoring of the few facilities that accept it. This fact became painfully clear in Mead, Nebraska, this spring. There, an ethanol plant mismanaged the millions of bushels of treated corn seed it accepted from seed companies each year. The result -- hazardous seed waste piled on the facility and pesticides surfacing in ponds and surface water miles away from the facility, sometimes poisoning wildlife -- has served as a wake-up call to many in the industry.

"When we get comfortable with something, we get cavalier," said Cary Giguere, a pesticide regulator in

Vermont, which recently became the first state to fully regulate treated seeds as pesticides. "We got comfortable with pink-coated corn seed. So the industry got cavalier with it. It should never have happened."

The concept of treated seed is appealing. The seed takes up the systemic insecticides -- usually neonicotinoids -- into plant tissue to protect it from hard-to-scout soil pests. Fungicides shield the seed from the many soil-dwelling diseases lurking around it, all with less work and pesticide exposure for the farmer. As the practice grew, it didn't occur to many farmers to opt out, Hesterberg noted. "I just kind of went along with what the seed company said," he said. "They started always offering treated seed and they told us it would pay off."

The agricultural industry isn't the only user of pesticides found in seed treatments. Neonicotinoids, the most common insecticides found on today's treated seeds, are also sold in an array of consumer products such as pet collars and lawn and garden insect treatments. That adds to the difficulty of judging just how much of a particular pesticide is going out into the environment annually.

For years, scientists and environmentalists have been sounding the alarm that these insecticides are surfacing well beyond their targeted fields and lawns.

Academic and government studies have found neonicotinoids present in many American waterways, from rivers and wetlands to municipal drinking water. Their presence in soils and water have been linked to detrimental effects on birds, mammals, pollinators such as bees, beneficial insects and aquatic invertebrates. CDC researchers have also found the chemicals in the urine of roughly half Americans sampled, raising questions about their effect on humans, as well.

PESTICIDES AS INSURANCE

In central Illinois, Frank Rademacher has been opting for more untreated corn and soybean seed each year, after on-farm trials have shown negligible benefits. "Last year was the first year we ordered everything untreated," the Gifford, Illinois, farmer told DTN. But the path to this decision wasn't easy.

He can readily order naked soybean seeds, as soybean seed is usually treated farther downstream in the seed business, sometimes at the farm but more commonly at the retailer. But it's not a popular choice, because seed treatments are a profitable business for farmer-dealers

and retailers. Rademacher estimates going without them trims about \$7.50 off a unit of soybean seed. "For a lot of local dealers, the treating side is the most profitable part of their business," he noted. "But they'll sell you untreated, if you ask."

Naked corn seed is much harder to find.

Most companies treat nearly 100% of their corn seed upstream, before the corn is bagged and shipped to other distributors. Some larger seed companies simply don't make untreated corn seed available, forcing growers to turn to small, non-GMO or organic seed companies. Seed companies that do offer untreated seed, such as Pioneer (now owned by Corteva) and Syngenta, must be asked months in advance and will only offer a limited selection of hybrids. "There's not that much to pick from -- we didn't get exactly what we ordered, we didn't get as much of one hybrid as we wanted," Rademacher conceded. "So there are challenges like that."

Farmers who choose untreated seed also see major reductions in their replant insurance, a valuable policy in which seed companies cover up to 100% of the costs of new seed for replanting a stand that failed due to weather or pest injury. For many companies, such as Bayer, Syngenta and Corteva, that coverage can drop as low as 50% when farmers don't plant fully coated seeds, according to company representatives. (See DTN's past reporting on these policies here: <https://www.dtnpf.com/...>)

That makes planting a bit more of a gamble, especially for corn, which isn't as resilient to early season stresses as soybeans, Hesterberg and Rademacher acknowledged. But both find this added risk manageable.

"I've lost treated stands in the past, too," said Hesterberg, who also has taken to planting untreated soybeans and wheat seed. Rademacher said he makes it a point to plant only when conditions are fit -- no pushing the envelope on early planting, for example. And both farmers have spent years working to make their acres more resilient to seasonal stresses such as flooding, with no-till and cover crops.

SEED TREATMENTS ADD UP

Free replant insurance and automatic pest control are an attractive option for most farmers, especially those farming large acres, where scouting for early-season damage is difficult. "The logic is easy -- it's what

everyone else does, it doesn't cost a whole lot, and [farmers] like insurance," Rademacher said.

The largest seed companies in the U.S. -- Bayer, Corteva and Syngenta -- declined to answer questions on seed treatment use and disposal for this story. In the past, the companies have stressed the environmental benefits of seed treatments, particularly the neonicotinoid insecticides imidacloprid (Gaucho, from Bayer and Valent USA), clothianidin (Poncho, from BASF) and thiamethoxam (Cruiser, from Syngenta).

The amounts of these chemicals applied to each seed are smaller than foliar insecticide applications -- from 0.25 to 1.25 milligrams per seed versus pounds of active ingredient sprayed over each acre. And as a class of chemicals, they are safer to apply, given that they are generally considered to have lower mammalian toxicity than some of the older chemistries used to treat insects in corn and soybeans, such as chlorpyrifos.

But the ubiquity of neonicotinoids on hundreds of millions of acres of row crops every year may be undoing many of those benefits. Between the 1950s and the 1990s, less than 10% of soybean acres and less than 50% of corn acres were treated with insecticides. Now, EPA estimates that nearly 100% of non-organic corn seed planted in the U.S. is coated with one of two insecticides -- clothianidin and thiamethoxam. Industry estimates for other crops suggest that between 2012 and 2014, approximately 76% of soybeans, 62% of cotton and 56% of wheat acres were planted to insecticide and fungicide-coated seed. See more here: <https://www.dtnpf.com/...> and here: <https://academic.oup.com/...>

Neonicotinoids are now the most commonly used insecticides in the world, accounting for 25% of all global insecticide use by 2014.

"Look, the fact that we don't have farmers applying chlorpyrifos to seed bins [planter boxes] and stirring them with their bare arms anymore is a good thing," Giguere said. "But the fact that neonicotinoids are now everywhere is probably not such a good thing, either."

WHO'S COUNTING? NOT EPA

Normally, EPA monitors the use of registered pesticides and its federal partner, the U.S. Geological Survey (USGS), collects data from a broad array of sources,

both private and public, to create maps of pesticide use each year.

Seed treatments fall through a bureaucratic crack. The "treated article" exemption to EPA's governing law, the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), means pesticide-treated items, such as railroad ties or paint, don't fall under normal registration and monitoring requirements. Once pesticides are coated on the seed, the agency stops tracking or counting them.

As a result, most estimates of seed treatment pesticide use rely on approximations compiled by surveys and "conservative usage assumptions" made by EPA, based on acreage and industry's self-reporting to the agency. In a testament to the precarious nature of this accounting, USGS completely abandoned its attempts to measure and map how many neonicotinoid insecticides are used in seed treatments in 2014, citing a lack of reliable data.

SCIENTISTS QUESTION BENEFITS OF WIDESPREAD SEED TREATMENTS

In the same year USGS gave up on tracking insecticides used via seed treatments, EPA set off a firestorm in the industry by releasing an economic benefits analysis concluding that seed treatments on soybeans offered no real economic benefit to farmers, with the exception of the southern U.S. where pest populations are more intense. Over the next few years, many academic entomologists in the Midwest and Southeast have come to agree with those conclusions. Most recently, some entomologists are starting to question the value of widespread, prophylactic seed treatment use in Midwestern corn fields as well. See more here: <https://www.epa.gov/...> and here: <https://besjournals.onlinelibrary.wiley.com/...>

Seed and agricultural companies have strongly objected to these conclusions and, in 2015, they commissioned their own study from a group called AgInformatics, which analyzed published studies, industry field trials and insecticide screening tests and asked farmers to self-report the monetary value of seed treatments to them. The studies concluded they were very valuable, on all crops. See it here: <http://aginformatcs.com/...>

Academic scientists' conclusions are based more on independent field studies and the biology of the soil-dwelling pests targeted by seed insecticides, such as seedcorn maggot, wireworms, grubs and bean leaf beetle. All can be very damaging insects, but they tend

to be sporadic pests in much of the corn and soybean-growing parts of the country, noted Christian Krupke, a Purdue University entomologist who has led many studies scrutinizing neonicotinoid benefits. Other insects targeted by seed treatments, such as soybean aphid, typically reach economically damaging levels later in the summer, beyond the timeframe that neonicotinoids are present in crop tissue in significant concentrations. The result is farmers treating more corn and soybean acres with insecticides than ever before, as insurance against sporadic pests whose populations have not increased in the same timeframe, Krupke and fellow Penn State entomologist John Tooker concluded in a recent report. See more here: <https://www.frontiersin.org/...>

It took a lot of data to sway some scientists to this conclusion. University of Wisconsin soybean agronomist Shawn Conley recommended seed treatments for many years, especially for farmers trying to push soybean planting earlier each year.

"I'm the poster boy of someone who has 'flip-flopped' on this," Conley noted. "Of course, what really happened is that the data generation increased. We started off with a few data points, just in Wisconsin. But when I started looking at it from a national perspective, it changed." Two years ago, Conley and a team of 22 entomologists, plant pathologists and statisticians released a meta-study of 194 field studies across 14 states concluding that no part of the soybean seed treatment package -- insecticide or fungicide -- paid off for farmers in the Midwest, mid-Atlantic or Southeast states comprising 85% of U.S. soybean acreage.

"We found that, yes, there are certain situations, such as high manure or in cover crop systems, where the higher risk of insects means the insecticide has a chance of actually controlling an insect," Conley explained.

"But overall, for the broad prophylactic treatment of every acre, the return on investment was basically zero. If anyone makes money, it's not the farmer. At most they might break even." (See more on that study here: <https://www.dtnpf.com/...> and here: <https://www.nature.com/...>)

The notable exception to these conclusions has been the Midsouth region, where mild winters and long growing seasons lead to considerably more pest pressure, explained Mississippi State University entomologist Angus Catchot. For cotton growers, neonicotinoid seed treatments are a staple in the fight against thrips, a pest

whose annual likelihood is "pretty much 100%" as Catchot notes. There, a different challenge has emerged, as tobacco thrips have evolved resistance to the neonicotinoid insecticides used against them. Growers are eagerly awaiting a GE cotton variety that will fight thrips with Bt proteins. (See more here: <https://www.dtnpf.com/...>)

Catchot and his Midsouth colleagues also recommend the annual use of corn seed treatments. "We can, year in and year out, very clearly show big benefits to seed treatments in corn in our region; it can [commonly] be 10 to 20 bushels, depending on the year and the pest," he said. (See more here: <https://pubmed.ncbi.nlm.nih.gov/...>)

In southern soybeans, the advantage to treatments is slimmer. That is most likely due to the soybean plant's storied ability to compensate for early season stand damage, Catchot said. There, Midsouth researchers see an average yield bump of around 2 bushels per acre, much like their northern colleagues. (See more here: <https://pubmed.ncbi.nlm.nih.gov/...>) But between heavy annual pest pressure and the prevalence of early planted soybeans, Catchot said Southern soybean growers tend to find treatments a worthwhile investment -- and he mostly agrees. "For some people that's not worth the added front-end loading cost; but for most it is," he said.

For Catchot, the key is that soybean growers still have the option to buy soybeans without seed treatment. As essential as he finds corn seed treatments for Midsouth growers, the lack of untreated corn seed access is not an ideal industry practice for pesticide use, he said.

"I always like growers to have a choice," he said. "I don't like leaving farmers with no recourse to do something different."

There also is the worry that overuse of seed treatments might ultimately punish growers who truly need them. "The problem is seed treatments are really important in certain agricultural systems," said Michigan State University entomologist Chris DiFonzo. "And instead the industry put them on everything to the point that they might be regulated or pulled."

ENVIRONMENTAL CONCERNS CATCH EYES

As seed treatment use has grown steadily in the past decade, farmer knowledge of the ingredients within them has declined dramatically.

The most recent catalogue of seed treatment active ingredients, compiled by University of Wisconsin researchers, tallied 263 branded seed treatment products, representing 56 unique active ingredients. Just one active ingredient, the common fungicide metalaxyl, is sold under 14 different brand names. See the full catalogue here: <https://ipcm.wisc.edu/...>

Insecticides and fungicides aren't the only seed treatment ingredients, either. A crop seed has become valuable real estate, with companies coating on other compounds each year, such as nematicides, plant growth regulators and microbial products marketed for plant health.

In a study published last spring, Penn State University plant pathologist Paul Esker and his colleagues found that fewer farmers than ever can name which of these dizzying array of ingredients are coated on their seed. The study found that 16% of the responding cotton growers, 35% of corn growers, 38% of the soybean growers, 43% of winter wheat growers and 57% of spring wheat growers were unable to name the branded seed treatment product used on their crops, much less the individual pesticides within them.

In contrast, these farmers were readily able to provide the names of pesticides they applied to fields later in the season, by air or sprayer, 97% to 99% of the time. (See more from that study here: <https://www.dtnpf.com/...>)

Hesterberg was one such farmer not so long ago, he said. He could name the seed treatment package he used -- Escalate from Beck's Hybrids -- but he couldn't name the active ingredients. For a farmer who thought carefully about every input on his farm and prioritized soil health, that didn't sit right, he recalled.

"The more research I've done, the more I've realized it's probably not a wise thing to load up seed with everything we've got every single year," he said.

Both Hesterberg and Rademacher said potential environmental costs of annual seed treatment use have also come onto their radar in recent years.

"I've got honeybees on three sides of me," Hesterberg said. "A few years ago, we had a very windy spring." The dust that abrades off seeds during planting, especially with vacuum seed planters, blew around. "One beekeeper near us, she had a huge loss," Hesterberg said. (See more on dust-off risks from seed treatments here: <https://www.dtnpf.com/...>).

Scientists have also raised concerns over their impact on non-target pests within agricultural fields. Among the first to raise questions was a team of Penn State scientists, who found that slugs that fed on neonicotinoid-coated seeds and seedlings survived but became toxic to their natural insect predators such as spiders and beetles. (See more here: <https://agfax.com/...>).

Since then, researchers have published dozens of studies showing negative impacts on pollinators, aquatic insects and soil-dwelling insects. Most recently, a meta-study from University of Missouri scientists and the USGS found that neonicotinoids negatively affected the abundance, behavior, condition, reproductive success and survival of 14 classes of beneficial insects. See more here: <https://esajournals.onlinelibrary.wiley.com/...>

Minnesota state regulators found that 12 species of birds and 14 species of mammals also readily consumed spilled treated seed. In March, the Minnesota Department of Natural Resources released the results of analyzing 800 deer spleens from the 2019 hunting season in the state; they found that 61% tested positive for neonicotinoids, albeit at low levels. South Dakota State University scientists, inspired by abnormal deer behavior, conducted a study that same year that found that contact with "field-relevant" doses of imidacloprid could negatively affect white-tailed deer's behavior, size and development. See more here: <https://www.sciencedirect.com/...>, here: <https://www.dnr.state.mn.us/...>, and here: <https://www.nature.com/...>

Another growing area of concern is that neonicotinoids don't always stay put on the seed even when in the soil. Studies by both industry and academics have determined that only 5% to 20% of neonicotinoids are taken up by the plant, with the rest free to leach into soil and water. "There's a lot of leaching because they are highly water-soluble compounds," explained Michelle Hladik, an environmental organic chemist with the USGS. "If there is rain or irrigation, neonicotinoids can dissolve and can be transported down into the soil and groundwater, potentially. Or if there is a big rain event, they could

flow over land or, in an agricultural field, go into a tile drain."

As a result, neonicotinoid insecticides are surfacing in American waterways with increasing frequency, from streams and wetlands to municipal water supplies. In one recent national study piloted by Hladik, scientists found them in 53% of streams sampled across the U.S., from California to Delaware. The Midwest is an area of particularly frequent detections; one of Hladik's studies sampled streams in Iowa from March to May of 2013 and found clothianidin in 75% of the samples and thiamethoxam in 47%. Pesticide concentrations were found in every sampled stream, and their concentrations climbed after rainfall events, suggesting they were washed out of treated fields. See more here: <https://www.usgs.gov/...> and here: <https://ca.water.usgs.gov/...>

Imidacloprid is especially persistent in the environment. A USGS study this year found the compound in river water at concentrations above EPA-established risk levels hundreds of times at 81% of the river sites sampled, earning it the study's dubious honor of having "the most widespread potential toxicity." (See the study, which assessed 221 pesticides in water, here: <https://www.sciencedirect.com/...>).

"It's not just an agriculture thing," explained Hladik. "We can find neonicotinoids in urban areas, too. But when we find them in areas like the Great Lakes or Iowa -- where they are used for agriculture -- we do see an increase in concentrations following the crop year, especially for clothianidin and thiamethoxam used in seed coatings."

One 2016 study Hladik worked on with University of Iowa scientists found imidacloprid, clothianidin and thiamethoxam in the university tap water samples collected from May to July. Not only did the compounds survive certain water treatment processes, but in another study, the same group of researchers warned that neonicotinoids have the potential to form even more toxic metabolites (breakdown products) after undergoing the chlorination processes common in drinking water treatments. See more here: <https://ppc.uiowa.edu/...> and here: <https://cheec.uiowa.edu/...>

In emailed responses to DTN's inquiries, EPA said the agency is not concerned about these exposures, for either humans or animal life, based on their risk assessments for neonicotinoids, which rely on modeling. "The levels

found in American waterways are much lower than modeling estimates used in the [EPA's] human health and ecological risk assessments," the statement read. "Therefore, EPA considers the drinking water and ecological exposure estimates to be protective overestimates of actual exposure."

Others are less confident in the safety of these exposures. A recent study by Center for Disease Control scientists found that half of the U.S. population had detectable concentrations of at least one of the six neonicotinoids or their metabolites, with children aged 3 to 11 seeing the highest concentrations. Among the most commonly detected insecticides were acetamiprid, commonly used in vegetable and fruit production, and imidacloprid, which is used in both agriculture and consumer products. Clothianidin and thiamethoxam, common seed treatment ingredients, were also detected. (See it here: <https://pubmed.ncbi.nlm.nih.gov/...>).

Melissa Perry, a George Washington University public health researcher who studies pesticides' effects on human health, said this type of scrutiny is long overdue, as neonicotinoid use has grown rapidly the past two decades. "This kind of surveillance is absolutely essential," she said. "Neonicotinoids came onto the market very quickly and they pose a pesticide use -- systemic insecticides -- that we don't have good, established ways to evaluate for effects on the environment and human health. It's as if we're waiting for problems to emerge and, in the absence of immediate hazard, we're assuming they're safe. And that's not a justified assumption to make."

TREATED SEED DISCARDS

One such problem emerged recently in Mead, Nebraska, at a now-idled ethanol plant called AltEn, kicking off the latest environmental concern around seed treatments: the fate of leftover treated seeds.

For five years, the plant accepted millions of bushels of leftover treated seed from most of the country's leading corn seed companies to make ethanol. The plant's mishandling of the contaminated ethanol byproducts (DDGs) and wastewater slowly polluted the surrounding area, sickening wildlife and killing bees. The plant has been shut down, but huge piles of DDGs and discard treated seed remain, with pesticides and fertilizer occasionally running off into neighboring surface water, as seed companies race to clean it up. (See more from

DTN: <https://www.dtnpf.com/...> and here: <https://www.dtnpf.com/...>)

EPA, which has been tangentially involved in the cleanup, told DTN in an emailed statement the region around the ethanol plant is currently at serious risk from the pesticide pollution there. "...[T]he wet cake and wastewater produced by the Nebraska ethanol facility represent a level of contamination that has no uniformity or limit on the number and amount of pesticides present," the statement said. "EPA cannot conclude that land application of the wet cake or discharging the wastewater onto land will not result in unreasonable adverse effects on humans or the environment."

It remains hard to know whether the AltEn ethanol plant pollution is a disastrous one-off mistake or a symptom of a larger problem. Seed companies and the EPA have refused to estimate to DTN how much treated corn and soybean seeds have to be discarded at the end of each year, nor where the seeds are sent.

And EPA claims ignorance of treated seed disposal practices in the industry, directing inquiries to state regulators. Treated seed is regulated under individual state "seed laws," but those mostly address labeling requirements and are focused on the seed, not the pesticide, explained Patrick Jones, president of the Association of American Pesticide Control Officials. "There are no regulations in most states in either program to address the disposal of treated seed," he said.

While the federal labels for seed treatments give instructions on burying or destroying small amounts of leftover seed, there are no federal guidelines for disposing of large amounts of it. Bulk amounts of pesticide-coated seed generally qualify as hazardous waste under state laws. But for the most part, companies have created their own oversight of disposal methods, via an industry group called Pesticide Environmental Stewardship. The PES advertises a short list of acceptable destinations for treated seed: ethanol plants, municipal landfills, waste management facilities, power plants and cement kilns. See more here: <https://pesticidestewardship.org/...>

How much treated seed is discarded each year? DTN obtained estimates from a variety of industry sources, with most asking to remain anonymous. All settled on around 10% of treated seed as a likely figure.

Ten percent is a popular percentage for retailers and farmers to over-order, to protect themselves and customers in the case of bad weather and stand failures, explained Wisconsin's Conley, who was willing to go on the record about these estimates. "Usually a seed company suggests a farmer books 10% extra seed, just to have it in case," he said.

Based on a corn planting of 92 million acres, nearly 100% of it treated, that would leave the industry with roughly 3.8 million bushels of treated corn seed to discard each year, Conley calculated. For soybeans, based on a planting of 84 million acres and Conley's estimate of 80% treated, that would leave industry with roughly 6 million bushels of treated soybean seed to discard each year, he said.

For context, it would take nearly 10 trips for a 110-car train to move that much corn, and roughly 15 trips for the estimate of discarded soybeans.

EPA's risk assessments for neonicotinoid and fungicide ingredients do not consider any risks from the bulk disposal of treated seed, the agency admitted in a statement to DTN. Its risk assessments for pesticides are created "assuming the pesticide products are used properly in accordance with the product label and are disposed of as directed on the label," the agency wrote.

Nonetheless, the agency told DTN it is satisfied with its analysis. "While our risk assessments do not specifically consider the possibility of large accumulations of treated seed in landfills and other disposal facilities, the risk assessments do not underestimate exposure."

FUNGICIDES: THE LESSER KNOWN PESTICIDE

For as much research has sprung up around neonicotinoid seed treatments, their partners on the seed -- fungicides -- have been far less scrutinized.

While plenty of research exists on how fungicides behave in foliar applications, there is little information available on how the compounds behave on the seed. Plant pathologists contacted by DTN were largely at a loss to characterize how much fungicide might leave the seed and how it might behave in the soils or water after application.

"It's not a conversation I've had ever," admitted Penn State's Esker. "Fungicides have not been considered as closely as insecticides or herbicides."

The 2021 analysis of river water by USGS is one of few available studies documenting fungicide presence in U.S. waterways, but even there, scientists couldn't look for half of the fungicides used in the country, because of analytical limitations. Nonetheless, they found quite a few; the most frequently detected fungicides were azoxystrobin, a common corn and soybean seed treatment ingredient, and propiconazole, also used in corn and soybeans, as well as wheat and rice fields.

What does this mean for aquatic life and human health? Scientists aren't sure. A group of European and American scientists just penned a warning letter to the industry in 2019, calling fungicides "an overlooked pesticide class." They concluded that fungicides, at current use levels, do pose risks to aquatic life, particularly insects and fungi. See it here: <https://pubs.acs.org/...>

THE FUTURE

Following the lead of other countries such as Canada and members of the EU, some states such as Maryland, Massachusetts and New York already restrict the use and sales of neonicotinoids beyond EPA's rules. In April, the Nebraska legislature passed a bill that bans ethanol plants from accepting treated seed, in light of the Mead disaster. A similar bill is underway in the Illinois legislature.

Other states are mulling laws that would empower state regulators to fully monitor treated seed as a pesticide, unlike EPA. Vermont became the first state to do just that in 2016. The new law was written after members of the state's senate agriculture committee asked Giguere a question about the percentage of crop seeds treated in the state -- and he couldn't answer, he recalled.

"They had passed a pollinator protection bill and that's a piece of information that was missing," Giguere said. "There was a data gap."

Now Vermont pesticide regulators get reports on exactly how much seed is treated and where it goes, and there is an advisory group considering whether to require farmers to become certified applicators in order to plant treated seeds, since they are technically applying pesticides in the process.

"These steps were all part of conversations going on in the registration division of EPA 15 years ago, too,"

Giguere recalled. "But we are the only state with this authority currently."

Could EPA ever change how it regulates treated seed? A 2017 petition from the Center for Food Safety argues that it should.

The petition, which was submitted in 2017, represents the American Beekeeping Federation, American Bird Conservancy, American Honey Producers Association, Pesticide Action Network and Pollinator Stewardship Council and a handful of farmers. It asks EPA to remove the treated article exemption for treated seeds and fully track and monitor pesticide use via seed treatments going forward. See it here: <https://www.epa.gov/...>

In the four years since the petition was submitted, EPA has been silent.

In its emailed statement to DTN, the agency wrote that "The Agency is working on a response to this petition. Until the Agency comes to a conclusion, treated seeds meeting the treated article exemption criteria will continue to fall under the treated article exemption."

(Progressive Farmer, July 14, 2021)
<https://www.dtnpf.com/agriculture/web/ag/crops/article/2021/07/13/seed-treatment-overload-unintended>

CEU Meetings

Please note that many of these meetings are now being done virtual. Please contact the meeting host directly if you have any questions.

Date August 4, 2021

Title: 2021 Oklahoma Fumigation Workshop
Location: OSU Greenhouse Learning Center Stillwater OK
Contact: Edmond Bonjour (405)-744-6489
https://secure.touchnet.com/C20271_ustores/web/store_main.jsp?STOREID=15

CEU's:	Category(s):
3	7C
3	10

Date August 10, 2021

Title: Canadian County Early Season Wheat Management Meeting
Location: El Reno OK
Contact: Kyle Worthington (405) 262-0155
<https://calendar.okstate.edu/oces/?trumbaEmbed=view%3devent%26eventid%3d153923439>

CEU's:	Category(s):
1	1A
1	4
2	10

Date August 12, 2021

Title: Central Oklahoma Turf Conference
Location: Redlands College El Reno OK
Contact: Kyle Worthington (405) 262-0155
<https://calendar.okstate.edu/oces/?trumbaEmbed=view%3devent%26eventid%3d153923432>

CEU's:	Category(s):
6	3A
6	6
6	10

Date September 7-9, 2021

Title: ENSYSTEX - 2021 CEU Workshop

Location: TBA

Contact: Don Stetler (281) 217-2965

CEU's:	Category(s):
2	7A
6	7B

Date September 16-17, 2021

Title: 2021 OPMA Fall Conference

Location: Marriott Souther Hills, Tulsa

Contact: Eileen Imwalle (405)-726-8773

<https://www.ok-pca.com/conferences>

CEU's:	Category(s):
3	3A
1	6
5	7A
4	7B
3	8
9	10
1	13

Date October 6-7, 2021

Title: 2021 Fall OKVMA Conference

Location: Hard Rock Casino Catoosa OK

Contact: Kathy Markham (918)-256-9302

<https://okvma.com/conferences/>

CEU's:	Category(s):
4	A
4	1A
6	3A
5	5
6	6
6	10

ODAFF Approved Online CEU Course Links

Online Pest Control Courses

<https://www.onlinepestcontrolcourses.com/>

PestED.com

<https://www.pested.com/>

Certified Training Institute

<https://www.certifiedtraininginstitute.com/>

WSU URBAN IPM AND PESTICIDE SAFETY EDUCATION PROGRAM

<https://pep.wsu.edu/rct/recertonline/>

CEU University

<http://www.ceuschool.org/>

Technical Learning College

<http://www.abctlc.com/>

All Star Pro Training

www.allstarce.com

Wood Destroying Organism Inspection Course

www.nachi.org/wdocourse.htm

CTN Educational Services Inc

http://ctnedu.com/oklahoma_applicator_enroll.html

Pest Network

<http://www.pestnetwork.com/>

Veseris

<http://www.pestweb.com/>

AG CEU Online

<https://agceuonline.com/courses/state/37>

Target Specialty Products Online Training

<https://www.target-specialty.com/training/online-training>

For more information and an updated list of CEU meetings, click on this link:

<http://www.kellysolutions.com/OK/applicators/courses/searchCourseTitle.asp>

ODAFF Test Information

Testing will be done at testing centers in multiple locations around the state by PSI Services LLC.

For more information and instructions, please go to <https://bit.ly/3sF4y0x>.

Reservation must be made in advance at www.psiexams.com/ or call **855-579-4643**

PSI locations.

Oklahoma City 3800 N Classen Blvd, Ste C-20,
Oklahoma City, OK 73118

Tulsa 2816 East 51st Street, Suite 101, Tulsa, OK
74105

McAlester 21 East Carl Albert Parkway (US Hwy 270),
McAlester, Oklahoma 74501

Woodward 1915 Oklahoma Ave, Suite 3, Woodward,
OK 73801

Lawton Great Plains Technology Center, 4500 West
Lee Blvd Building 300- RM 308, Lawton, OK 73505

Enid Autry Technology Center, 1201 W. Willow Rd,
Enid, OK 73703

Ponca City Pioneer Technology Center, 2101 N Ash,
Ponca City, OK 74601

Norman Moore Norman Technology Center, 4701
12th Ave NW, Norman, Oklahoma, 73070

If you have questions on pesticide certification. Please
email or call:

Kevin Shelton
405-744-1060 kevin.shelton@okstate.edu or

Charles Luper
405-744-5808 charles.luper@okstate.edu

Find us on Twitter at @OkstatePestEd

**Pesticide Safety
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